

CLAIMS

1. Portable electronic instrument, such as a wristwatch (1), including:
  - a case (2) enclosing an electronic module (6) and a display device (5);
  - a crystal (3) fitted onto said case (2);
  - an electric power supply source (10) housed in said case (2) and powering
- 5 said electronic module (6) and said display device (5); and
  - an antenna (20) for receiving and/or transmitting radio-frequency signals electrically connected to said electronic module (6), characterised in that said case (2) includes:
    - an exterior body (4) including a bottom (4a) and lateral walls (4b); and
    - a bezel element (7) fitted onto said exterior body (4) and supporting said crystal (3),
  - 10 and in that said antenna (20) rests on an outer face (7a) of said bezel element (7).
2. Instrument according to claim 1, characterised in that said bezel element (7) is fitted in a sealed manner onto said exterior body (4).
- 15 3. Instrument according to claim 1 or 2, further including a casing ring element (8) arranged between said bezel element (7) and said bottom (4a), said electronic module (6) and said display device (5) being enclosed between said bezel element (7) and said casing ring element (8).
- 20 4. Instrument according to claim 3, characterised in that said casing ring element (8) and said bezel element (7) are secured to each other so as to form a sub-assembly able to be mounted on and dismantled from said exterior body (4).
5. Instrument according to claim 3 or 4, characterised in that said casing ring element (8) is held in said bottom (4a) by fixing means (40, 42).
- 25 6. Instrument according to any of the preceding claims, characterised in that said exterior body (4) is made of metal material and in that said bezel element (7) is made of plastic material.
7. Instrument according to claim 6, characterised in that an inner face (7b) of said bezel element (7) is metallised and electrically connected to said exterior body
- 30 (4) made of metal material.
8. Instrument according to claim 6 or 7, further including an exterior element (11) made of metal material of essentially annular shape fitted onto said bezel element (7), this annular-shaped exterior element having an aperture (11a) inside which said antenna (20) is housed.

9. Instrument according to any of the preceding claims, further including a protective cover (9) made of dielectric material fitted onto said bezel element (7) and covering said antenna (20).

10. Instrument according to any of the preceding claims, characterised in  
5 that said antenna (20) is a patch type antenna including a radiating element (21)  
separated from a ground plane (23) by a dielectric (22) and electrically connected to  
said electronic module (6) by a feed conductor (25), said ground plane (23) resting on  
the outer face (7a) of said bezel element (7) and being electrically connected to said  
electronic module (6) by ground conductor (26).

10 11. Instrument according to claim 10, characterised in that said ground plane  
(23) is formed of stamped metal plate including at least one leg (26a, 26b) bent  
outside the ground plane and directly connecting said ground plane (23) to said  
electronic module (6), said leg (26a, 26b) forming said antenna ground conductor  
(26).

15 12. Instrument according to claim 10 or 11, characterised in that said  
antenna (20) is arranged at 12 o'clock with respect to said display device (5) and in an  
inclined position with respect to the plane ( $\Pi$ ) in which said display device (5) is  
located.

13. Instrument according to claims 10 to 12, characterised in that said  
20 electronic module (6) includes a printed circuit board (60) to which said antenna (20)  
is connected,

and wherein said instrument further includes protection means (70) for  
protecting said antenna (20) and the circuits associated with said antenna (20) against  
electrostatic discharge, these protection means including a printed serpentine path  
25 (70) electrically connected via its ends (70a, 70b) between said excitation (25) and  
ground (26) conductors of the antenna.

14. Instrument according to any of the preceding claims, characterised in  
that said bottom (4a) and said lateral walls (4b) are made in a single part.